DOCUMENT RESUME

ED 148 055 EC 103 363

AUTHOR Price, Marianne; Goodman, Libby
TITLE Learning Disabilities in the Secondary School: Student Progress and Characteristics.
INSTITUTION Montgomery County Intermediate Unit 23, Blue Bell, Pa.
SPONS AGENCY Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C. Div. of Compensatory Education.
PUB DATE [77]
NOTE 90p.; For related information, see EC 103 361-365; Tables may reproduce poorly due to small type

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS *Academic Achievement; Adolescents; Curriculum Development; Language Arts; *Learning Disabilities; Mathematics; *Program Evaluation; *Remedial Programs; Secondary Education; Statistical Data; *Student Characteristics; Vocational Interests

ABSTRACT

The final project evaluation on "Curricular Development for Secondary Learning Disabilities" focuses on the academic achievement of 86 students who participated in seven secondary learning disabilities classes in which the curricular model developed by the project was utilized. It is noted that the purpose of the project was to provide intensive developmental/remedial instruction to learning disabled adolescents in an effort to significantly upgrade their math and language arts skills. The report provides informaton in the following project components: the sample, test measures, procedures, and results (relating to such areas as intellectual status, process functioning, academic achievement, and vocational interests). Among the reported findings are that learning disabled students have severe deficits in many areas of academic skills; that given an intensive remedial academic program, students are able to make impressive gains in reading and mathematics; and students have a strong interest in enrolling in vocational-technical programs in high school. Appendixes, which make up over half the document, include tables with demographic information and test scores. (SBH)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED148055

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

LEARNING DISABILITIES IN THE SECONDARY SCHOOL: STUDENT PROGRESS AND CHARACTERISTICS

Montgomery County Intermediate Unit 23
Dennis U. Harken, Ph.D., Executive Director
Lester Mann, Ph.D., Director of Special Education
Libby Goodman, Ed.D., Coordinator of Learning Disabilities Program

EC103363

LEARNING DISABILITIES IN THE SECONDARY SCHOOL: STUDENT PROGRESS AND CHARACTERISTICS

Prepared by:

Marianne Price
Libby Goodman

TABLE OF CONTENTS

Report

Appendix A: Demographic Information

Appendix B: Scaled Scores, Weschsler Intelligence Scale for Children

Appendix C: Expected and Actual Scores, Benton Visual Retention Test

Appendix D: Raw Scores, Bender Gestalt

Appendix E: Mental Age Scores, Detroit Tests of Learning Aptitudes, Selected Subtests

Appendix F: Instructional Spelling Levels, Temple Informal Spelling Test

Appendix G: Raw Scores and Quartile Ranking, Lincoln Intermediate Spelling Test

Appendix H: Raw Scores, Age Equivalents, Percentiles, Myklebust Picture Story Language Test

Appendix I: Raw Scores, Grade Level Scores, Scaled Scores, Gain Scores, Stanford Achievement Tests

Appendix J: Raw Scores, Percentiles, AAHPER Youth Fitness Test

REPORT

This report is the final project evaluation for "Curricular Development for Secondary Learning Disabilities," a Title III project sponsored by the Montgomery County Intermediate Unit. The report is concerned with the academic achievement of those students who participate in seven secondary learning disabilities classes in which the curricular model developed by the project was utilized.

The purpose of the project was to provide intensive developmental/remedial instruction to learning disabled adolescents in an effort to significantly upgrade their skills in the areas of math and language arts. The data presented speak to this issue. In addition, descriptive data are presented which reveal the status of the students on various tests of physical ability, process skills, and vocational interests. It was felt that these areas were worthy of investigation because they might yield information important to educational programming.

The testing program was conducted during the 1975-76 school year for all secondary school students enrolled in the project's learning disabilities classes. The purpose of the testing program was:

1. to measure the academic gains made by the students in those skill areas in which they receive remedial instruction, namely, reading and mathematics,

2. to assess the extent of the students' spelling skills and writing skills,

3. to survey students' vocational interests,

4. to determine if process deficits typically manifested in learning disabled children are apparent in the learning disabled adolescent, and

5. to secure group data on the physical development of the learning disabled adolescent to determine if the deficiencies in gross motor skills often associated with the young learning disabled youngster are typical of the learning disabled adolescent.

Sample

A total of 86 students were enrolled in the Montgomery County Intermediate Unit (MCIU) secondary learning disabilities program

during the 1975-76 school term. Sixty-three of these students participated in the testing program. Participation was contingent upon written parental/guardian consent. A letter which explained the purpose of the testing and included a permission form to be completed and returned to the Intermediate Unit was mailed to the parents/guardians of all students enrolled in the MCIU learning disabilities program. Parents/guardians who did not respond to the letter were contacted by telephone. Permission for testing was obtained for 73% of the students.

The learning disability classrooms which these students attended are located in seven suburban and rural school districts in Montgomery County (see Table 1). For the most part, these classes are housed in junior high schools. In fact, all students but two were seventh, eighth, and ninth graders (see Table 2). The average class enrollment was 12 students. Six students (approximately 10%) were black and 57 (approximately 90%) were white; there were 16 females and 47 males. Students' IQs ranged from 80 to 119. At the time of testing, subjects' ages ranged from 12 years, 6 months to 17 years, 5 months.

Table 1

Location, Level, Enrollment of Secondary Learning Disabilities Classes (1975-76 School Year)

District	Building	Grade Level	Type of Community	Total Class Enrollments	No. of Students Participating in Study
Abington	Glenside-Weldon	7 - 8	Suburban	13	10
Hatboro-Horsham	Keith Valley	8 - 9	Suburban	10	9
Pottstown	Middle Sch.	6 - 7	Rural	10	10
Souderton	Indian Valley	7 - 9	Rural	14	8
Springfield	Hillcrest	7 - 9	Suburban	16	12
Wissahickon	Middle Sch.	7 - 8	Suburban	14	10
Wissahickon	High Sch.	9 - 12	Suburban	9	4

Table 2

Distribution of Students by Grade Level

Grade	Enrollment	
	Number	Percentage
7	25	40
8	25	40
9	11	17
10	1	2
11	1	2

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

Socioeconomic status as defined by the Duncan Occupational Scale was determined for 40 students whose fathers' occupations were known: 35% of these students were classified as low socioeconomic status, 15% as middle socioeconomic status, and 50% as high socioeconomic status.

Test Measures

The selection of the test battery was influenced by a number of factors. Ease of administration was an important consideration as the tests were to be administered by trained, but not certified individuals. The time required to administer the test battery was limited at the request of participating school districts to prevent too great a loss of instructional time for the students involved (the total test battery required approximately three hours per student). Test validity and reliability were also considered in the selection process. The majority of the tests selected were standardized measures. Nonstandardized measures were chosen if suitable standardized tests could not be found. Table 3 presents a list of the tests included in the test battery, a brief description of each test's intent and format, and the reason for each test's selection.

Table 3

Test Measures Used to Evaluate Secondary Learning Disabilities Students

Title	Publisher	Level	Description of Content	Format	Reason for Selection
Myklebust Picture Story Language Test	Grune and Stratton, Inc.	Ages 7 to 17	A developmental scale for written language intended to appraise normal and abnormal development of written language. The child is presented with a picture and asked to write a story about it. The story is analyzed in terms of length (Productivity), and correctness of expression (syntax). The results are reported in percentiles.	Group Test	Written language is typically not assessed by standardized achievement tests. The results of this test will have direct implications for curriculum planning in the area of language arts.
Temple Spelling Test	Temple University Psychology of Reading Department	1st Grade and up	An informal test of spelling composed of lists of graded words (1st-6th) which are presented orally to the students. The results indicate the level at which the child should receive spelling instruction.	Individual Test	Used to establish an instructional spelling level.
Stanford Achievement Test	Harcourt Brace Jovanovich, Inc.	Primary Intermediate Advanced	A standardized achievement test of basic skills. The results are reported as grade level scores. Tests are given only for those areas in which the student received remedial instruction.	Group Test	The test is used on a pre-post basis to assist program evaluation.

Table 3 (Continued)

Test Measures Used to Evaluate Secondary Learning Disabilities Students

Title	Publisher	Level	Description of Content	Format	Reason for Selection
Lincoln Diagnostic Spelling Test	Educational Records Bureau	Grades 2-12	A standardized test of spelling in which words are presented orally by the examiners. The norms are revised periodically. The results are reported as quartile rankings. They can be interpreted as follows: 1st quartile — student's scores fall into bottom quarter of the scores reported for his age level. 4th quartile — student's scores fall into top quarter of the scores reported for his age level, etc.	Group Test	We wished to assess the students' skills using a standardized instrument. Typically, such tests require the student to choose the correctly spelled form of a word from a list of 4 or 5 incorrect spellings. Our students do poorly with such a format. We want to see if a different format will result in better performance.
Detroit Tests of Learning Aptitude (selected subtests)	The Bobbs-Merrill Company	3 yrs. & up	The results are interpreted as mental age scores	Individual Test	These are skills with which younger learning disabled students typically have a great deal of difficulty. We wished to determine if they continue to be problem areas for the adolescent learn-disabled student.
Subtest 5 - Motor Speed and Precision			A test of fine motor skills. Consists of a sheet of circles graduated in size. Pupil mark Xs in as many circles as possible in a specified period of time.		

Table 3 (Continued)

Test Measures Used to Evaluate Secondary Learning Disabilities Students

Title	Publisher	Level	Description of Content	Format	Reason for Selection
Subtest 10 - Orientation			A test of basic concepts. Includes 42 questions that deal with concepts of time, size, and directions.		
Subtest 13 - Auditory Attention Span for Related Syllables			A test of auditory attention. Consists of a series of 43 sentences of increasing length which the examiner reads and the student repeats.		
Benton Revised Test of Visual Reception	The Psychological Corporation	Ages 8 & up	Designed to assess memory, perception, and visuomotor functions. Composed of designs which the student must copy from memory after a timed presentation. There are three forms of the test and four possible modes of presentation. The results are interpreted as pass and fail, depending on the total number of errors.	Individual Test	This test will be used to assess short-term memory.
Ohio Vocational Interest Survey	Harcourt Brace Jovanovich, Inc.	Grades 8-12	Gathers background information about occupational plans, school subject preferences, curriculum plans, vocational course interests, etc.	Group Test	The results will be used to assist students with educational and vocational planning.

Table 3 (Continued)

Test Measures Used to Evaluate Secondary Learning Disabilities Students

Title	Publisher	Level	Description of Content	Format	Reason for Selection
Youth Fitness Test	AAHPER Publications (American Alliance for Health, Physical Education, and Recreation)	Ages 10-17	A test of physical fitness officially adopted by the President's Council on Physical Fitness and Sports. Composed of seven subtests designed to measure various components of physical fitness. The results are reported as percentile rankings for each of the various subtests.	Group Test	The literature on learning disabled adolescents often describes them as being less well developed physically than their peers. These reports are typically based on clinical observations. We wished to determine if this, in fact, is the case.
Bender Gestalt Test of Visual Motor Integration	Grune and Stratton, Inc.	Koppitz Norms to age 12. Clinical assessment above age 12.	Designed to assess visual motor perception. Composed of nine designs which the student must copy. The results are reported as total number of errors.	Individual Test	The young learning disabled child often experiences difficulty in the area of visual motor functioning. We wished to determine if it continues to be a problem for the adolescent.

Procedure and Results

All tests were administered by trained and qualified employees of the Montgomery County Intermediate Unit. The testing was carried out during the months of April and May, 1976, with the exception of the intelligence testing which is a requirement for entrance into the program and the Stanford Achievement testing which is typically given on a yearly pretest/posttest basis. In all, a total of five group tests and four individual tests were given (see Table 3). The tests were administered according to the procedures outlined in their respective test manuals; however, slight modifications were made to two of the tests, the Myklebust Picture Story Language Test, and the Orientation Subtest from the Detroit Tests of Learning Aptitude. The stimulus picture used in the administration of the Myklebust Picture Story Language Test depicts a seven-year-old child playing with a dollhouse, hardly an appropriate theme for a secondary student. A photograph of a ninth grade student building a model ship was substituted. The Orientation Subtest (Detroit Tests of Learning Aptitude) contains five items which require the student to perform a gross motor activity. It was the opinion of the staff that secondary students would find these activities embarrassing as they represented elemental skills which would pose little, if any, difficulty for secondary-aged students. Therefore, these items were deleted from the subtest.

All tests but one were scored either by those persons who administered the tests or by the assistant project director. The one exception was the Ohio Vocational Interest Survey which was machine scored by the publisher of that test. Test results will be discussed as they relate to four major areas: (a) intellectual status, (b) process functioning, (c) academic achievement, and (d) vocational interests.

Intellectual Status. Intelligence testing is a requirement for placement in a learning disabilities class. All subjects in the sample were administered the WISC prior to acceptance into the program. Seventy-nine percent of the subjects were given the Revised WISC,

the remainder were given the 1949 Edition. The results indicate that approximately 81% of the students had a full scale IQ of 90 or above. The mean verbal IQ was 93.96 while the mean performance IQ was 101. Seventy-three percent of the students in the sample had a verbal IQ of 90 or above; approximately 84% had a performance IQ of 90 or above. A breakdown of the IQ scores analyzed in terms of verbal and performance abilities is presented in Table 4.

Table 4

Distribution of Full Scale, Verbal, and Performance IQs for Secondary Learning Disabled Students

Range	Full Scale IQ		Verbal IQ		Performance IQ	
	N	%	N	%	N	%
70 - 79	0	0	1	2	1	2
80 - 89	12	19	16	25	9	14
90 - 99	28	44	30	48	19	30
100 - 109	18	29	15	24	19	30
110 - 119	5	8	1	2	11	17
120 - 129	0	0	0	0	4	6

	Full Scale IQ	Verbal IQ	Performance IQ
$\bar{X}$	96.74	93.96	101.00
σ	7.61	7.63	11.69

Note: All percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

Intelligence test results were also analyzed in terms of student performance on the individual subtests. Mean scaled scores and standard deviations for various subtests of the WISC are reported in Table 5. The mean scaled scores for the individual verbal subtests range from 8.271 to 9.7. The verbal subtests which presented the greatest difficulty for the students were Information and Arithmetic. Thirty-three percent of the students in the sample scored more than one standard deviation below the norm on the Information subtest; 33% scored more than one standard deviation below the norm on the Arithmetic subtest. Among the performance

subtests, Block Design and Coding were the most difficult. The percentage of students scoring more than one standard deviation below the norm on the Block Design and Coding subtests was 21% and 32% respectively. Student performances on the WISC subtests is summarized in Table 5. For each subtest, the mean scaled score, the range of scaled scores, the standard deviation of scaled scores, and the number and percentage of students scoring more than one standard deviation below the norm are presented.

Table 5

Student Performances on WISC Subtests

Test	Mean of Scaled Scores	Range of Scaled Scores	Standard Dev. Scaled Scores	Students Scoring More Than One Standard Deviation Below Norm	
				N	%
Verbal Tests					
Information	8.5	5-13	2.088	21	33
Comprehension	9.7	5-14	2.177	7	11
Arithmetic	8.271	4-13	1.855	19	30
Similarities	9.864	5-14	2.403	10	16
Vocabulary	9.367	5-15	2.075	8	13
Digit Span	8.480	4-13	2.917	8	13
Performance Tests					
Picture Completion	10.746	6-17	2.844	8	13
Picture Arrangement	10.525	3-14	2.595	4	6
Block Design	9.763	3-14	2.569	13	21
Object Assembly	10.610	5-17	2.871	6	10
Coding	8.780	2-17	2.704	20	32

Note: Total Sample = 63

Process Tests

Visual motor-integration. Tasks requiring visual-motor integration typically present problems for the young learning disabled child. The purpose of assessing process functions was to determine if such tasks continue to present problems to the learning disabled adolescent. Two tests were administered: (1) the Benton Visual Retention Test, a test of visual-motor integration and visual memory, and (2) the Bender Test of Visual-Motor Integration. On the Benton, a student's performance is based on a comparison between his expected and actual score. According to the manual,

> An obtained score which is two points below the expected score may be considered to raise the question of a specific disability in visual memory or visuomotor function. An obtained score which is three or more points below the expected score may be considered to suggest such a disability. (p. 44)

In the sample of 63 students, 11% obtained scores that raise the question of specific disability and 17% obtained scores that suggest that such a disability is present.

On the Bender, the student's performance was assessed clinically since the Koppitz Scoring System does not provide norms for students above twelve years of age. Ninety-seven percent of the students performed adequately on the Bender. Three percent (2 students) did not.

Since the Bender and Benton tests are alike in that both assess visual-motor integration by requiring students to copy designs, a comparison of students' performances on the two tests was made. The Benton proved to be the more difficult of the two tests for the secondary learning disabled students, possibly because it taps the added dimension of visual memory. Eleven students' performances were inadequate on the Benton while only two students' performances were inadequate on the Bender. Only one student performed poorly on both the Benton and the Bender. These results are summarized in Table 6.

Table 6

Comparison of Bender and Benton Test Performance for a Sample of Learning Disabled Adolescents

Bender Performance				Benton Performance				Combined Test Performance					
Adequate		Inadequate		Adequate		Inadequate		Adequate Both		Inadequate One		Inadequate Both	
N	%	N	%	N	%	N	%	N	%	N	%	N	%
61	97	2	3	52	83	11	17	50	80	12	19	1	2

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to 100%.

Detroit Tests of Learning Aptitude. The Detroit Tests of Learning Aptitude is a series of tests of process abilities widely used in the diagnosis of learning disabilities in students in the elementary grades; however these tests are also normed for secondary aged students. Three of the tests were selected for inclusion in this test battery: (1) Motor Speed and Precision, (2) Orientation, and (3) Auditory Attention Span for Related Syllables.

The Motor Speed and Precision Test (Test 5) requires the student to mark as many Xs as possible inside a series of circles of decreasing size in a specified amount of time. It is a measure of fine motor skills. This particular task and other similar tasks involving fine motor skills often present great difficulty for the pre-adolescent learning disabled youngster. The purpose in giving the test to adolescent learning disabled students was to determine if the task would prove to be a difficult one for them as well. The results indicate that while the task was not a difficult one for the majority of secondary learning disabled students in the sample, it did pose problems for a significant minority. Seventy-three percent of the students performed at or above the age expectancy level; 27% performed two or more years below their age expectancy level (see Table 7). Obviously deficiencies in fine motor skills do persist into the adolescent years for some learning disabled students.

The Orientation Test (Test 10) measures the student's knowledge of concepts of direction, time, and size. A lack of understanding of these concepts is a common problem among young learning disabled children that may be a contributing factor to some youngsters' inability to adequately comprehend the written and spoken word and to master certain arithmetical skills. This subtest was given to determine if confusion centering around these concepts persists into adolescence. Fifty-seven percent of the students in the sample scored two or more years below their age expectancy level. The remainder performed at or above the expectancy level (see Table 7). The results suggest that simple concepts of direction, time and size are an enigma to many secondary-aged learning disabled adolescents. The manner in which this disability affects performance bears further investigation.

The Auditory Attention Span for Related Syllables (Test 13) was the third test administered from the Detroit. This test consists of a series of 43 sentences which the examiner reads and the student repeats. It is a test of the student's ability to immediately recall spoken sentences and repeat them accurately. The results clearly indicate that this type of task was an overwhelmingly difficult one for the students in this sample. The results clearly indicate that ninety-five percent of the students performed at a level two or more years below their age expectancy; 5% performed at the expected level (see Table 7).

Table 7

Students' Performance on Selected Detroit Subtests

Students' Performance Compared to Age Expectancy	Motor Speed		Orientation		Aud. Attention	
	N	%	N	%	N	%
2 or more years above expected level	12	19	0	0	0	0
At expected level (plus or minus 1 year	34	54	27	43	3	5
2 or more years below expected level	17	27	36	57	52	95

Note: Percentages have been rounded to the nearest whole number and consequently the total may not be exactly 100%.

It is apparent that the tasks involved in some of the process tests presented no difficulty for most of the secondary learning disabled students in this sample—i.e., tasks of visual-motor integration and motor speed and accuracy. Other tasks, for example those involving auditory attention and temporal and spatial relations, proved to be extremely difficult for many of the secondary students. While this comparison is interesting, the primary question is whether or not process deficits affect the student's academic achievement. To get at that question, a correlation matrix was constructed to determine the degree of relationship between students' performance on tests of academic achievement and their performance on tests of process functioning. These results will be discussed in greater detail in a succeeding section of this report.

Academic Tests

The instructional program of the Montgomery County Intermediate Unit Secondary Learning Disabilities Program in which the students in this sample participated stresses the acquisition of basic skills in the areas of reading, mathematics, language, and spelling. Core curricula for each of these areas are divided into units of instruction. Each student receives both pre- and posttests for each unit. The pretests tell where within a given instructional unit, and prior to instruction therein, a student's instructional needs are strongest and when previous learning and achievement have made instructional requirements minimal. In posttesting, a score (criterion) of 80% correct indicates "mastery" of that unit, unless examination of test results and teacher/supervisor knowledge of other data and observations indicate specific weaknesses that require attention despite the criterion of 80% being reached. If criterion is achieved, and there are specific weaknesses indicated, the student proceeds to the next instructional unit in the course of instruction. If the criterion is not achieved or specific weaknesses are apparent, the student is reinstructed in these skills until mastery of the unit is achieved. Therefore, while all students receive instruction in the same core curricula, each student proceeds at his own rate.

Tests of academic skills were administered to assess the effectiveness of the instructional program of the Montgomery County Intermediate

Unit Secondary Learning Disabilities Program. The purpose of the evaluation carried out by this project was to: (1) determine the overall levels of mastery of secondary learning disabled students in reading and mathematics prior to and following instructional intervention, and (2) to assess the students' academic status with respect to written language skills and spelling skills. Accordingly, tests of achievement were administered in the areas of reading, mathematics, spelling, and written language. The results of these tests are discussed below.

Spelling. The Temple Informal Spelling Inventory was administered for the purpose of determining each student's instructional spelling level. The test consists of lists of words graded according to level of difficulty. The instructional spelling level is the level at which the student spells 75% or more of the words correctly. In taking this test, the student writes a word after the examiner has repeated the word, read it in a sentence, and repeated it again. The interpretation of results is based on a comparison of actual and expected performance. The instructional spelling level of each student was compared to his grade placement (expected level of performance) and the degree of deficiency was determined. The results reported in Table 8 indicate that 84% of the students had an instructional spelling level that was three or more years below grade level.

Table 8

Temple Informal Spelling Inventory

Instructional Spelling Levels - Compared to Grade Expectancy

Spelling Performance	Students	
	N	%
Above grade level	0	0
On grade level	1	2
1-2 years below grade level	9	15
3-4 years below grade level	26	43
5-6 years below grade level	25	41

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

The Lincoln Spelling Test, a norm-referenced test, was administered to all of the learning disabled students in the Montgomery County Intermediate Unit Learning Disabilities Program. It was felt that a standardized spelling test in contrast to an informal assessment instrument might yield more accurate instructional information than the informal spelling test. The Lincoln was chosen over other standardized spelling tests because of its format which requires the student to write the words, rather than the approach typically used in a standardized test which requires the student to select the correct spelling of a word from among three or four misspellings of the word. The test consists of a list of 100 words arranged in cycles corresponding to nine categories of spelling rules. The words are not arranged in order of difficulty. All of the words must be presented to every student. There is no time limit. The test can be interpreted in two ways. The student's performance can be analyzed in terms of the type of errors he makes and this information can be used in developing educational prescriptions. In addition, the test provides a set of norms which report student performance in terms of quartile rankings. The quartile scores provide some information for comparing the learning disabled students as a group to their nonhandicapped peers in terms of spelling skills. Norms for this test are only available for 1964-1970. All students in the sample, with one exception, placed in the first (lowest) quartile. Regarding the utility of standardized versus the informal spelling assessment—i.e., the Lincoln versus the Temple, the Lincoln was of little educational value for this group. All 100 words had to be given to each student in order of difficulty. Because the students were working at a frustration level throughout most of the test, the test took an inordinate amount of time to administer. Some students appeared to "give up" soon after the testing had begun—as it became obvious that this was a task at which they could not succeed. The problem combined with the problem of obtaining recent norms make it very unlikely that the Montgomery County Secondary Learning Disabilities Program will use the Lincoln Spelling Test again.

The results of both the Temple Informal Spelling Inventory and the Lincoln Spelling Test attest to the difficulties that secondary learning disabled students encounter in the spelling area. They are not surprising. If one considers that reading proficiency is generally considered a prerequisite for spelling proficiency, but they do underscore the need for a strong remedial spelling component in a secondary learning disabilities program.

The Picture Story Language Test (Myklebust) was given as a measure of written language skills. The students were asked to write a story about a stimulus picture. (The project staff felt that the stimulus picture included in the test was inappropriate for secondary students and substituted one that was more suitable.) In accordance with the test directions, each student was given as much time as needed to write his or her story. Performance was evaluated along four of the five dimensions incorporated in this test including: (1) total number of words, (2) total number of sentences, (3) average amount of words per sentence, and (4) syntax which is a measure of the student's ability to apply rules of capitalization, punctuation, and word usage. A fifth dimension, an abstract-concrete scale of the quality of the content was deleted. This scale was <u>not</u> used because the scoring procedure for this dimension requires at least two rates, but has very low inter-rater reliability.

The results of the testing indicate that the learning disabled students in this sample are markedly deficient in the four dimensions in which their performance was assessed. Eighty-eight percent of the students scored below the 50th percentile on Total Words, 53% below the 50th percentile on Total Sentences, 92% below the 50th percentile on Words per Sentence and 86% below the 50th percentile on Syntax Quotients (see Table 9). These results are not unexpected; they verify classroom teachers' observations and assessment of their students' writing skills. They also emphasize the fact that the learning disabled student may continue to have difficulties with writing skills beyond the point at which he or she has successfully mastered the basic reading skills. For this reason, we recognize the necessity for including

written language skills in the learning disabilities program at the secondary level. This component of the remedial program should include direct instruction in the mechanics of punctuation, word usage, etc., ample opportunity to apply these skills through written assignments, and direct feedback on performance should be provided.

Table 9

Students' Performance on Myklebust

Percentile Ranges	Total Words		Total Sentences		Words per Sentence		Syntax Quotient	
	N	%	N	%	N	%	N	%
0-25	41	69	21	36	47	80	42	71
26-50	12	20	10	17	7	12	10	17
51-75	3	5	18	31	2	3	3	5
76-100	4	5	10	17	3	5	4	7

Note: Percentages have been rounded to the nearest whole number and consequently may total more than 100%.

Reading and Arithmetic. The Stanford Achievement Test was given in September and May of the 1975-76 school year as a pre-post measure of student academic gains. Mean gain scores were computed for three subtests: Reading Comprehension, Math Concepts, and Math Computation. The mean gain on the test of Reading Comprehension was 1.66 years. Thirty-four percent of the students made less than one year's progress; 66% made from one year to more than three years' progress. On the test of Math Concepts, the mean gain was 1.14 years with 46% of the students making less than one year's progress and 54% making from one year to more than three years' progress. Finally, the mean gain on the test of Math Computation was 1.25 years. Forty-three percent of the students made less than a year's progress; 57% progress from one to three or more years.

These results affirm the effectiveness of the instructional program that is used in the Montgomery County Intermediate Unit secondary learning

disabilities classes. The gains are especially impressive if one considers the fact that "compensatory programs generally deal with a population gaining from four to seven months in a 10-month instructional year. If a treatment raises that gain to an average of 10 months... the additional gain can be attributed to the treatment with a reasonable degree of confidence" (Rapp and Haggart, 1973). The mean gain was more than 10 months (an instructional year) in all areas in which pre and post measures were taken—Reading Comprehension, Math Concepts, and Math Computation. Furthermore, the majority of students made one or more years' gain in each area (see Table 10).

Table 10

Stanford Achievement Test

Pupil Performance Mean Gain Scores

	Reading Comprehension	Math Concepts	Math Computation
Mean	1.66	1.14	1.25
Standard Deviation	1.44	1.47	1.65
Number*	50	46	46
	Progress		
	%	%	%
Less than one year	34	46	43
1.0 - 1.9 years	32	26	24
2.0 - 2.9 years	14	20	17
3.0 years plus	20	8	16

*The discrepancy between the number of students taking the reading and math tests exists because those students who receive instruction in only one area are tested in that area only.

Process Deficits and Academic Functioning

Both process tests and academic tests were administered to the secondary learning disabled students. The purpose for giving the process tests

was to determine if some of the problems typically associated with the young learning disabled child, e.g., poor visual-motor integration, short attention span, and poor directionality—are characteristic of the learning disabled adolescent as well. Academic tests were given to assess the effectiveness of the instructional program. The results of process and academic testing have been presented and discussed.

An additional question of importance is whether or not there is a relationship between process deficits and academic performance. A correlation matrix was constructed to determine the relationships among the process and academic test scores and to draw some inferences about the behaviors that these relationships may represent. Although the students as a group performed very poorly on some of the process tests and very well on others, there were no significant correlations between any of the process test scores and the academic test scores thus indicating no apparent relationships.

Vocational Interest Survey

The Ohio Vocational Interest Survey was administered to 33 of the eighth and ninth grade students in the sample. This interest survey is designed to assist students in their educational and vocational planning. In addition to serving this purpose, the results of the survey also helped the project staff to find out where students' interests lie in terms of high school and post-high school educational programming, and to determine if students' high school and post-high school plans were realistic in terms of their abilities.

The Ohio Vocational Interest Survey is divided into two sections. The Student Information Questionnaire gathers background information about the student's occupational plans, school subject preferences, curriculum plans, post-high school plans, and vocational course interests. The Interest Inventory which is comprised of 280 work activity items, profiles each student's interest in terms of 24 scales which represent the entire spectrum of occupations as outlined in the Dictionary of Occupational Titles.

On the Survey of Occupational Plans, students were asked to indicate a first and second choice among 24 occupational categories. The

occupation selected most frequently as a first choice was "crafts" with 30% of the students indicating an interest in this area. "Machine work" and "artistic work" were the two categories selected most frequently as a second choice. The complete results of the Survey of Occupational Plans are summarized in Table 11.

Table 11

Survey of Occupational Plans

	First Choice		Second Choice	
	N	%	N	%
1. Manual Work	0	0	4	12
2. Machine Work	2	6	5	15
3. Personal Service	1	3	1	3
4. Care People-Animals	1	3	0	0
5. Clerical Work	1	3	0	0
6. Inspect-Testing	0	0	0	0
7. Crafts	10	30	2	6
8. Customer Service	0	0	0	0
9. Nursing	1	3	1	3
10. Skilled Per. Serv.	1	3	1	3
11. Training	1	3	0	0
12. Literary	1	3	1	3
13. Numerical	0	0	1	3
14. Appraisal	0	0	0	0
15. Agriculture	2	6	0	0
16. Applied Tech.	2	6	2	6
17. Promotion-Comm.	0	0	3	9
18. Management	0	0	1	3
19. Artistic	2	6	5	15
20. Sales Represent.	0	0	0	0
21. Music	2	6	2	6
22. Entertainment	4	12	1	3
23. Teach-Counsel-Soc. Work	1	3	2	6
24. Medical	0	0	0	0
OMITS	1	3	1	3

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

Students were also asked to indicate their best liked subjects on a first and second choice basis. Art was the subject area most frequently selected as both a first and second choice. The complete results of the Survey of Best Liked Subjects are reported in Table 12.

Table 12

Survey of Best Liked Subjects

Best Liked Subject	First Choice		Second Choice	
	N	%	N	%
1. Mathematics	4	12	3	9
2. English	1	3	3	9
3. Social Studies	6	18	2	6
4. Science	4	12	5	15
5. Foreign Languages	2	6	0	0
6. Music	2	6	4	12
7. Art	12	36	14	42
OMITS	2	6	2	6

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

On the High School Program Survey, students were asked in what type of high school program they would like to be enrolled. Forty-two percent of the students indicated that they wanted to enroll in a vocational-technical program and 30% expressed interest in a college preparatory program. Three percent did not respond to the item and the choices of the remaining 25% were distributed among business-commercial, general, and other programs (see Table 13).

Table 13

High School Program Survey

High School Program	N	%
1. College Preparatory	10	30
2. Business-Commercial	2	6
3. Vocational-Technical	14	42
4. General	3	9
5. Other	3	3
OMITS	1	3

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

Interestingly, a number of students indicated an intention to enroll in the college preparatory program. We know, of course, that some learning disabled students are able to successfully complete a regular college educational program. In addition to the traditional programs offered, there are now several colleges that are providing special programs specifically designed to accommodate the needs of the learning disabled student; however, these colleges are highly selective and as far as learning disabled students are concerned, they tend to limit admission to those who have above average ability, i.e., students for whom the prognosis for academic success is greatest. While a college education should not be ruled out for the learning disabled student, he will certainly require guidance in determining whether or not a college education is a realistic goal.

On the Survey of Post High School Plans, the student was asked if he/she plans to extend his/her education beyond high school and if so, to indicate the type of post-high school educational program that he/she would prefer. Thirty percent of the students were undecided. This response was predictable for this sample of students since it included young adolescents (eighth and ninth grades) many of whom have probably given little thought to what they will do after high school (see Table 14).

Table 14

Survey of Post-High School Plans

Post-High School Plans	N	%
1. Voc.-Tech. School	4	12
2. Business School	1	3
3. Nursing School	0	0
4. Junior College, etc.	2	6
5. College, University	5	15
6. Military	3	9
7. Apprenticeship	5	15
8. None	2	6
9. Undecided	10	30
OMITS	1	3

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

The students were also asked whether or not they were interested in a vocational program. Fifteen percent indicated that they were already enrolled in such a program, 73% said they were not enrolled but were interested in finding out more about vocational programs, 9% expressed no interest, and 3% did not respond to this item. The fact that an overwhelming majority of the secondary learning disabled students indicated interest in learning more about vocational programs points to the need for making this type of information available to them.

Finally, the survey asked the students to select from among 24 vocational programs the one he/she would like to take. Students were asked to indicate both a first and second choice. The vocational program most frequently selected as a first choice was "mechanics." "Auto body repair" was the most frequently chosen second choice (see Table 15).

Table 15

Vocational Choice Program

Program	First Choice		Second Choice	
	N	%	N	%
1. Gen. Agriculture	0	0	0	0
2. Forestry, etc.	3	9	0	0
3. Office Practices	0	0	0	0
4. Secretarial	0	0	1	3
5. Data Processing	0	0	1	3
6. Bookkeeping	1	3	0	0
7. Distributive Ed.	0	0	0	0
8. Food Services, etc.	2	6	1	3
9. Practical Nursing	1	3	0	0
10. Dental Asst., etc.	1	3	0	0
11. Home Economics	0	0	0	0
12. Auto Body Repair	1	3	9	27
13. Mechanics	6	18	3	9

(To be continued)

Table 15 (Continued)
Vocational Choice Program

Program	First Choice		Second Choice	
	N	%	N	%
14. Building Trades	2	6	0	0
15. Printing, etc.	0	0	1	3
16. Commercial	1	3	1	3
17. Cosmetology	2	6	0	0
18. Drafting	2	6	0	0
19. Machine Shop	1	3	1	3
20. Sheet Metal, etc.	3	9	3	9
21. Electronics	3	9	2	6
22. Appliance Repair	0	0	0	0
23. Tailoring, etc.	0	0	1	3
24. Undecided	0	0	4	12
OMITS	4	12	5	15

Note: Percentages have been rounded to the nearest whole number and consequently the total may not add up to exactly 100%.

Physical Fitness

Seven subtests of the 1976 edition of the Youth Fitness Test, the only physical fitness test for which there are national norms, were administered to assess the students' physical fitness. Young learning disabled children are often reported to be clumsier, less well coordinated, and generally not as physically fit as their nonhandicapped peers. The Youth Fitness Test was given to determine if this was generally true of the learning disabled adolescent as well. The reresults for each subtest were tabulated in terms of the percentage of students whose scores placed them between the 0-25th percentiles, the 26-50th percentiles, the 51-75th percentiles, and the 76-100th percentiles. In general, the results indicate that within this atypical population, there is a normal range of performance as far as the various tests of physical fitness were concerned. Thus the learning disabled adolescents, in this sample at least, do not appear to be any

less physically fit than their nonhandicapped peers and as a group they do not exhibit the gross motor deficits typically associated with the young learning disabled child.

Table 16

Youth Fitness Test (AAHPER)

Subtest	Percentile Range	Students N	Students %
Pull-ups (boys)	0-25	10	19
Flexed Arm Hang (girls)	26-50	18	33
	51-75	8	15
	76-100	18	33
	Total	54	
Sit-ups	0-25	12	21
	26-50	13	23
	51-75	5	9
	76-100	27	47
	Total	57	
Shuttle Run	0-25	30	53
	26-50	10	18
	51-75	12	21
	76-100	5	9
	Total	57	
Fifty-Yard Dash	0-25	25	45
	26-50	13	23
	51-75	13	23
	76-100	5	9
	Total	56	
Walk-Run	0-25	25	45
	26-50	13	24
	51-75	8	15
	76-100	9	16
	Total	55	

(To be continued)

Table 16 (Continued)
Youth Fitness Test (AAHPER)

Subtest	Percentile Range	Students	
		N	%
Standing Long Jump	0-25	14	24
	26-50	20	35
	51-75	10	17
	76-100	14	24
	Total	58	

Note: Percentages have been rounded to the nearest whole number and consequently may not total exactly 100%.

Discussion of Results

The data reveals that the learning disabled students in this sample have severe deficits in many areas of academic skills. In addition to general deficiencies in reading and mathematics, spelling and specific written language skills pose great difficulty for these students. However, the results show that given an intensive remedial academic program, the students are able to make impressive academic gains in reading and mathematics.

Unfortunately the pre-post assessment strategy only involved reading comprehension and math concepts and computation. Clearly there is a need to incorporate assessment of written communication skills into the testing program as well.

The data also reveals that while the tasks involved in some of the process tests presented no difficulty for most of the secondary learning disabled students in the sample, i.e. tasks of visual motor integration and motor speed and accuracy, other tasks, for example those involving auditory attention and temporal and spatial relations, proved to be extremely difficult for the majority of students. Although a correlation matrix indicated no apparent relationship between process deficits and academic performance this is clearly an area that bears further investigation.

On the vocational interest survey, the students expressed a

strong interest in enrolling in vocational-technical programs in high school. A significant number of students also indicated the desire to pursue a college preparatory program. While we believe that numerous curricular options, including vocational-technical and college preparatory programs, should be made available to the learning disabled adolescent, we strongly recommend that the decision process involve career counseling based on a student interests and aptitudes. Where it appears that a student could perform successfully in a particular program, e.g. a vocational-technical program, with supportive services, they should be made available.

Finally, the results of the physical fitness tests indicate that within this atypical population, there is a normal range of performance. Thus, the learning disabled adolescents appear to be as physically fit as their nonhandicapped peers.

References

Rapp, M. L., & Haggart, S. W. Idiographic analysis of achievement measures. Educational Technology, 1973, 23-26.

Appendix A

Demographic Information

Student Number	Grade	Race	Sex	Birth Date	Age at Testing (months)	Father's Occupation	Duncan SES	Duncan Decile
101	8	C	M	2-8-62	170	Printer	31	6
102	8	C	M	7-26-62	164	Chemical Eng.	90	9
103	7	C	M	4-28-63	155	Owner of Joke Shop	47	7
104	7	C	M	12-30-62	159	Construction Worker	07	1
105	8	C	M	8-22-62	163	Lab Technician	62	8
106	7	C	M	4-24-61	179	Maintenance-Town Park Dept.	11	1
107	7	N	M	10-14-63	150	Unknown	-	-
108	7	C	M	4-20-63	155	Photographer	50	8
109	8	C	M	8-6-61	176	Asst. SalesMgr.	59	8
110	8	C	M	9-8-61	175	Janitor	09	1
201	7	C	M	12-15-62	160	Bell Tel. Installer	49	7
202	8	C	F	9-18-61	174	Accountant	78	9
203	7	C	M	4-3-63	156	Unknown	-	-
204	7	N	F	12-17-62	159	Shipping Clerk	22	5
205	8	C	M	2-3-61	182	Father dead Mother School Nurse	46	7
206	8	C	M	8-20-62	163	Plumber	34	6
207	7	C	F	3-15-63	157	Salesman/ Manufacture	66	9
208	7	C	F	3-24-63	156	Landscaper (step-father)	11	1
209	8	C	F	2-3-61	182	Roofer	15	3
210	7	C	F	6-30-62	165	Truck Driver	15	3
211	9	C	F	5-11-60	191	Unknown	-	-
212	9	C	F	9-24-60	186	Bell Tel.Oper.	45	3
301	8	C	M	12-26-61	173	Synthane Taylor Co.	-	-
302	8	C	M	10-8-62	162	Unknown	-	-
303	8	C	F	3-2-61	181	Longacres Poultry Dressing	-	-
304	7	C	M	12-10-62	160	Hatfield Packing	-	-
305	8	C	M	12-20-61	171	Merck, Sharp & Dohme	-	-
306	9	C	M	3-31-60	192	North Penn Hide	-	-
307	9	C	M	6-9-61	177	Diamond Glass	-	-
308	8	C	F	11-2-62	161	New father - Mother unemployed	-	-
401	9	C	M	11-26-60	184	Mgr. A & P Dairy	62	8
402	8	C	M	11-23-62	160	Gas Sta. Owner	31	5
403	9	C	M	8-22-61	175	Truck Driver Upper Dublin Schl.	15	3
404	9	C	M	7-10-61	177	Electrical Assembler	14	2

Student Number	Grade	Race	Sex	Birth Date	Age at Testing (months)	Father's Occupation	Duncan SES	Duncan Decile
405	8	C	M	11-25-62	160	Owner Paint Store	61	8
406	9	C	F	11-14-61	173	Unemployed	-	-
407	9	C	M	11-5-60	185	Custodian - Woolco	09	1
408	8	C	F	3-22-62	168	Draftsman	67	9
409	8	C	M	5-20-62	166	Manager - Hurst Performance	79	9
501	7	C	M	4-22-63	155	Assembly line Firestone	12	1
502	7	C	M	6-4-62	166	Maintenance-AMC Vending Machines	-	-
503	7	C	F	6-16-63	154	Mechanic	25	5
504	7	N	M	9-16-62	151	Cafeteria - Pennjurst	11	1
505	7	N	F	5-24-63	154	Plant Super.	49	7
506	7	C	M	9-14-63	151	Personnel Dir. KIWI	84	9
507	7	C	F	9-4-63	151	No father-Mother on welfare	-	-
508	7	C	M	9-13-62	163	Insurance Agt.	66	9
509	7	C	M	11-10-63	149	On welfare	-	-
510	7	C	M	2-25-62	157	Part-time Beautician (mother)	17	3
601	8	N	M	8-9-62	164	Sanitation Eng.	11	1
602	7	C	M	6-8-62	166	Bookkeeper	51	8
603	8	C	M	7-2-61	177	(Student is ward of Catholic Church)	-	-
604	7	C	M	9-26-62	162	Mfg. Rep.	47	7
605	7	N	F	4-4-62	168	Unknown	-	-
606	8	C	M	10-16-61	174	Acme Supermkt.	-	-
607	8	C	M	5-9-60	191	(Student is ward of Catholic Church)	-	-
608	8	C	M	9-18-61	174	Bell Tel.	-	-
609	8	C	M	9-7-61	175	Chas.Myers Co.	-	-
610	7	C	M	12-24-62	159	Unknown	-	-
701	9	C	M	5-12-61	179	No father	-	-
702	10	C	M	2-1-60	194	Exec. of N.Y. Bailing Co.	64	8
703	11	C	M	11-15-58	209	Carpenter	19	4
704	9	C	M	8-1-61	176	Engineer	87	9

Appendix B

Scaled Scores, Wechsler Intelligence Scale for Children

WISC

Student Number	WISC Norms (Revised or Old)	Verbal IQ	Performance IQ	Full Scale IQ	Information	Comp.	Arith.	Sim.	Voc.	Digit Span
101	R	88	105	96	-	-	7	9	10	4
102	R	96	91	92	10	8	10	10	9	10
103	O	91	99	94	9	7	9	9	9	6
104	R	92	118	104	5	11	10	7	11	12
105	O	90	115	101	8	8	10	8	8	7
106	R	91	98	93	6	11	7	9	10	-
107	R	88	108	97	7	10	8	8	5	11
108	R	92	87	89	8	9	10	10	7	-
109	R	74	95	83	-	-	-	-	3	4
110	R	102	111	106	11	8	11	14	8	6
201	O	109	92	101	11	16	9	9	12	-
202	R	101	75	87	9	13	7	12	10	-
203	R	98	91	94	9	9	10	10	11	-
204	O	97	89	93	9	8	8	6	9	-
205	R	88	86	86	7	10	8	7	9	-
206	O	96	99	97	10	13	6	7	11	-
207	R	85	82	85	7	9	8	9	9	-
208	R	86	105	94	6	9	8	6	10	-
209	R	87	95	90	6	6	8	6	9	-
210	R	85	108	95	7	9	8	5	9	-
211	R	80	106	91	7	7	4	9	7	-
212	R	101	87	93	9	9	7	15	11	-
301	R	102	114	108	13	11	4	13	11	4
302	R	101	120	110	13	8	8	10	12	10
303	R	91	87	88	6	9	10	10	8	9
304	R	84	104	92	-	-	-	-	-	-
305	R	96	118	106	10	10	8	11	8	13
306	R	97	118	107	10	13	8	9	8	-
307	R	92	100	95	9	9	10	8	8	-
308	R	113	86	100	13	11	9	14	14	6
401	O	82	96	88	6	5	6	13	8	5
402	R	103	92	98	11	-	8	-	13	-
403	R	111	104	108	13	11	7	13	15	-
404	O	82	107	93	8	6	9	4	7	9
405	O	91	114	102	9	-	7	-	10	-
406	O	91	124	107	9	9	5	12	8	9
407	O	91	80	85	5	9	13	8	5	11
408	O	92	101	96	7	8	7	11	11	9
409	R	102	124	113	11	11	6	12	12	10
501	R	98	92	95	8	11	10	10	10	-
502	R	103	120	112	11	11	7	13	11	-
503	R	105	115	110	11	10	8	12	13	-
504	R	92	95	92	9	6	10	10	9	-
505	R	97	104	100	6	12	9	11	10	-
506	R	97	102	100	10	12	6	10	10	-

Student Number	WISC Norms (Revised or Old)	Verbal IQ	Performance IQ	Full Scale IQ	Information	Comp.	Arith.	Sim.	Voc.	Digit Span
101	R	88	105	96	-	-	7	9	10	4
102	R	96	91	92	10	8	10	10	9	10
103	O	91	99	94	9	7	9	9	9	6
104	R	92	118	104	5	11	10	7	11	12
105	O	90	115	101	8	8	10	8	8	7
106	R	91	98	93	6	11	7	9	10	-
107	R	88	108	97	7	10	8	8	5	11
108	R	92	87	89	8	9	10	10	7	-
109	R	74	95	83	-	-	-	-	3	4
110	R	102	111	106	11	8	11	14	8	6
201	O	109	92	101	11	16	9	9	12	-
202	R	101	75	87	9	13	7	12	10	-
203	R	98	91	94	9	9	10	10	11	-
204	O	97	89	93	9	8	8	6	9	-
205	R	88	86	86	7	10	8	7	9	-
206	O	96	99	97	10	13	6	7	11	-
207	R	85	82	85	7	9	8	9	9	-
208	R	86	105	94	6	9	8	6	10	-
209	R	87	95	90	6	6	8	6	9	-
210	R	85	108	95	7	9	8	5	9	-
211	R	80	106	91	7	7	4	9	7	-
212	R	101	87	93	9	9	7	15	11	-
301	R	102	114	108	13	11	4	13	11	4
302	R	101	120	110	13	8	8	10	12	10
303	R	91	87	88	6	9	10	10	8	9
304	R	84	104	92	-	-	-	-	-	-
305	R	96	118	106	10	10	8	11	8	13
306	R	97	118	107	10	13	8	9	8	-
307	R	92	100	95	9	9	10	8	8	-
308	R	113	86	100	13	11	9	14	14	6
401	O	82	96	88	6	5	6	13	8	5
402	R	103	92	98	11	-	8	-	13	-
403	R	111	104	108	13	11	7	13	15	-
404	O	82	107	93	8	6	9	4	7	9
405	O	91	114	102	9	-	7	-	10	-
406	O	91	124	107	9	9	5	12	8	9
407	O	91	80	85	5	9	13	8	5	11
408	O	92	101	96	7	8	7	11	11	9
409	R	102	124	113	11	11	6	12	12	10
501	R	98	92	95	8	11	10	10	10	-
502	R	103	120	112	11	11	7	13	11	-
503	R	105	115	110	11	10	8	12	13	-
504	R	92	95	92	9	6	10	10	9	-
505	R	97	104	100	6	12	9	11	10	-
506	R	97	102	100	10	12	6	10	10	-

Student Number	WISC Norms (Revised or Old)	Verbal IQ	Performance IQ	Full Scale IQ	Information	Comp.	Arith.	Sim.	Voc.	Digit Span
507	R	94	90	91	6	11	10	10	8	-
508	R	96	109	102	8	8	12	10	9	-
509	R	91	106	98	7	9	7	9	11	-
510	R	97	84	89	10	10	9	11	8	-
601	R	101	102	101	10	10	8	13	10	-
602	R	97	101	99	9	11	7	11	10	-
603	R	88	92	89	6	11	8	7	9	-
604	R	81	84	81	6	6	8	7	8	-
605	-	-	-	-	-	-	-	-	-	-
606	R	92	106	99	8	-	8	12	10	-
607	R	97	111	103	7	11	9	11	10	-
608	R	101	111	105	11	9	10	11	10	-
609	R	96	106	101	7	13	6	9	12	-
610	O	105	118	112	10	10	10	13	11	12
701	R	100	91	95	8	13	11	9	9	9
702	R	97	106	101	9	9	11	11	8	6
703	R	87	95	90	6	14	5	8	7	6
704	R	90	100	93	9	9	9	8	7	14

Student Number	WISC Norms (Revised or Old)	Verbal IQ	Performance IQ	Full Scale IQ	Information	Comp.	Arith.	Sim.	Voc.	Digi Sp
507	R	94	90	91	6	11	10	10	8	-
508	R	96	109	102	8	8	12	10	9	-
509	R	91	106	98	7	9	7	9	11	-
510	R	97	84	89	10	10	9	11	8	-
601	R	101	102	101	10	10	8	13	10	-
602	R	97	101	99	9	11	7	11	10	-
603	R	88	92	89	6	11	8	7	9	-
604	R	81	84	81	6	6	8	7	8	-
605	-	-	-	-	-	-	-	-	-	-
606	R	92	106	99	8	-	8	12	10	-
607	R	97	111	103	7	11	9	11	10	-
608	R	101	111	105	11	9	10	11	10	-
609	R	96	106	101	7	13	6	9	12	-
610	O	105	118	112	10	10	10	13	11	12
701	R	100	91	95	8	13	11	9	9	[illegible]
702	R	97	106	101	9	9	11	11	8	[illegible]
703	R	87	95	90	6	14	5	8	7	[illegible]
704	R	90	100	93	9	9	9	8	7	[illegible]

WISC

Student Number	Picta. Comp.	Pict. Arrange.	Block Design	Obj.Ass.	Coding	Maze
101	14	-	13	15	2	-
102	9	10	11	9	5	-
103	11	12	7	8	11	-
104	14	11	14	13	11	-
105	14	11	13	13	10	-
106	12	11	10	10	6	-
107	8	11	9	10	8	-
108	7	9	7	9	9	-
109	-	-	-	-	-	-
110	13	14	11	15	5 pro-rated	-
201	8	6	11	10	9	-
202	8	8	7	5	4	-
203	6	8	7	13	10	-
204	9	9	6	9	13	-
205	8	9	7	10	6	-
206	8	13	10	9	9	-
207	6	8	6	7	10	-
208	10	11	11	10	12	-
209	7	9	4	8	7	-
210	7	13	11	12	13	-
211	7	9	4	8	7	-
212	9	11	3	10	8	-
301	15	10	12	16	7	-
302	14	12	12	15	11	-
303	8	10	7	9	7	-
304	-	-	-	-	-	-
305	15	11	13	12	12	-
306	16	14	12	11	10	-
307	11	8	11	13	7	-
308	7	9	7	8	9	-
401	9	9	9	11	9	-
402	-	13	11	-	3	-
403	11	11	11	14	6	-
404	11	11	12	7	14	-
405	-	11	13	-	12	-
406	15	13	13	13	13	-
407	8	5	10	8	5	-
408	10	11	13	7	10	-
409	17	14	12	14	10	-
501	7	10	9	9	10	-
502	11	14	12	17	10	-
503	13	14	12	12	10	-
504	9	11	8	9	10	-
505	11	9	9	11	13	-
506	14	8	10	14	6	-
507	11	9	7	7	9	-
508	15	14	10	10	8	-

WISC

Student Number	Picta. Comp.	Pict. Arrange.	Block Design	Obj. Ass.	Coding	Maze
509	16	14	9	11	5	-
510	11	3	8	10	7	-
601	11	9	11	12	9	-
602	11	13	10	13	4	-
603	10	9	9	7	10	-
604	8	9	10	7	4	-
605	-	-	-	-	-	-
606	11	13	9	14	8	-
607	11	15	9	13	10	-
608	13	15	13	8	9	-
609	11	11	10	9	14	-
610	14	15	12	14	8	-
701	11	9	6	11	7	-
702	12	11	11	10	11	-
703	8	5	10	14	10	-
704	10	8	13	10	9	-

Appendix C

Expected and Actual Scores, Benton Visual Retention Test

BENTON VISUAL RETENTION TEST

Student Number	Score	
	Expected	Actual
101	7	7
102	7	6
103	7	9
104	7	8
105	7	8
106	7	9
107	7	1*
108	7	8
109	7	6
110	8	8
201	7	7
202	7	4*
203	7	2*
204	7	5*
205	7	5*
206	7	9
207	7	9
208	7	7
209	7	5*
210	7	6
211	7	9
212	7	6
301	8	8
302	8	6*
303	7	6
304	7	8
305	8	9
306	8	9
307	8	7
308	7	7
401	7	5*
402	7	5*
403	8	5*
404	7	6
405	7	9
406	8	7
407	7	5*
408	7	6
409	8	9

Benton Visual Retention Test

Student Number	Score	
	Expected	Actual
501	7	6
502	8	7
503	8	9
504	7	4*
505	7	4*
506	7	7
507	6	7
508	7	7
509	7	8
510	7	7
601	7	4*
602	7	7
603	7	4*
604	7	6
605	7	3*
606	7	8
607	8	7
608	8	5*
609	7	9
610	8	7
701	8	7
702	8	7
703	7	4*
704	7	10

* "An obtained score which is two points below the expected score may be considered to raise the question of a specific disability in visual memory of visuomotor function. An obtained score which is three or more points below the expected score may be considered to suggest such a disability." (p. 44 of manual).

Appendix D

Raw Scores, Bender Gestalt

BENDER GESTALT TEST OF VISUAL MOTOR INTEGRATION

Student Number	Number of Errors
101	1
102	0
103	1
104	1
105	0
106	1
107	1
108	0
109	1
110	0
201	0
202	2
203	2
204	0
205	0
206	2
207	0
208	0
209	1
210	0
211	0
211	0
301	0
302	1
303	0
304	3
305	0
306	1
307	0
308	0
401	0
402	2
403	3
404	1
405	2
406	1
407	0
408	0
409	0
501	1
502	0
503	0
504	2
505	1
506	0
507	2
508	2
509	1
510	2

Bender Gestalt Test of Visual Motor Integration

Student Number	Number of Errors
601	1
602	2
603	1
604	0
605	1
606	0
607	0
608	1
609	0
610	3
701	0
702	1
703	0
704	0

Appendix E

Mental Age Scores, Detroit Tests of Learning Aptitudes, Selected Subtests

DETROIT TESTS OF LEARNING APTITUDE

-SUBTEST #5- MOTOR SPEED AND PRECISION

Student Number	Number Correct	Mental Age (yrs. & mo.)	Mental Age In Months
101	260	15-3	183
102	198	10-9	129
103	176	11-9	141
104	193	12-6	150
105	274	16-6	198
106	227	12-9	153
107	174	11-6	138
108	189	12-3	147
109	235	13-3	159
110	231	13-0	156
201	155	10-3	123
202	241	13-9	165
203	213	13-9	165
204	110	7-9	93
205	280	17-0	204
206	230	13-0	156
207	162	10-9	129
208	189	12-3	147
209	229	12-9	153
210	220	14-6	174
211	298	18-6	222
212	223	12-6	150
301	206	11-3	135
302	258	15-3	183
303	285	17-6	210
304	138	9-3	111
305	306	18-6	222
306	244	14-0	168
307	291	18-0	216
308	313	18-6	222
401	257	15-0	180
402	207	11-3	135
403	250	14-6	174
404	260	15-3	183
405	132	10-6	126
406	272	10-3	195
407	286	17-6	210
408	207	11-3	135
409	245	14-0	168
501	172	11-6	138
502	148	10-0	120
503	192	12-6	150
504	225	15-0	180
505	238	16-3	195

Detroit Tests of Learning Aptitude
-Subtest #5- Motor Speed and Precision

Student Number	Number Correct	Mental Age (yrs. & mo.)	Mental Age in Months
506	209	13-6	162
507	188	12-3	147
508	155	10-3	123
509	157	10-6	126
510	216	14-0	168
601	247	14-3	171
602	197	12-9	153
603	302	18-6	222
604	152	10-3	123
605	146	9-9	117
606	272	16-3	195
607	314	18-6	222
608	248	14-3	171
609	291	18-0	216
610	199	12-9	153
701	248	14-3	171
702	290	17-9	213
703	269	16-0	192
704	262	15-6	186

DETROIT TESTS OF LEARNING APTITUDE

-SUBTEST #10 - ORIENTATION

Student Number	Number Correct	Mental Age (yrs. & mo.)	Mental Age in Months
101	39	12-0	144
102	37	11-0	132
103	38	11-6	138
104	40	12-6	150
105	40	12-6	150
106	39	12-0	144
107	34	9-6	114
108	36	10-6	126
109	38	11-6	138
110	40	12-6	150
201	40	12-6	150
202	39	12-0	144
203	39	12-0	144
204	38	11-6	138
205	39	12-0	144
206	38	11-6	138
207	40	12-6	150
208	37	11-0	132
209	39	12-0	144
210	40	12-6	150
211	39	12-0	144
212	38	11-6	138
301	41	13-0	156
302	40	12-6	150
303	37	11-0	132
304	36	10-6	126
305	39	12-0	144
306	42	13-6	162
307	41	13-0	156
308	42	13-6	162
401	39	12-0	144
402	39	12-0	144
403	39	12-0	144
404	40	12-6	150
405	38	11-6	138
406	39	12-0	144
407	35	10-0	120
408	39	12-0	144
409	37	11-0	132
501	38	11-6	136
502	39	12-0	144
503	41	13-0	156
504	41	13-0	156

Detroit Tests of Learning Aptitude
-Subtest #10 - Orientation

Student Number	Number Correct	Mental Age (yrs. & mo.)	Mental Age In Months
505	36	10-6	126
506	38	11-6	138
507	40	12-6	150
508	38	11-6	138
509	34	9-6	114
510	39	12-0	144
601	40	12-6	150
602	39	12-0	144
603	38	11-6	138
604	40	12-6	150
605	37	11-0	132
606	38	11-6	138
607	37	11-0	132
608	41	13-0	156
609	40	12-6	150
610	42	13-6	162
701	39	12-0	144
702	40	12-6	150
703	38	11-6	138
704	41	13-0	156

DETROIT TESTS OF LEARNING APTITUDE

-SUBTEST #13 - AUDITORY ATTENTION SPAN FOR RELATED SYLLABLES

Student Number	# Correct	Mental Age (yrs & mo.)	Mental Age in Months
101	44	6-0	72
102	53	7-6	90
103	36	4-9	57
104	59	8-6	102
105	40	5-3	63
106	56	8-0	96
107	44	6-0	72
108	60	8-6	102
109	31	4-6	54
110	71	10-6	126
201	60	8-6	102
202	76	11-3	135
203	77	11-6	138
204	66	9-6	114
205	64	9-3	111
206	74	11-0	132
207	51	7-0	84
208	45	6-0	72
209	68	10-0	120
210	68	10-0	120
211	70	10-3	123
212	77	11-6	138
301	-	-	-
302	-	-	-
303	58	8-3	99
304	68	10-0	120
305	64	9-3	111
306	60	8-6	102
307	75	11-0	132
308	-	-	-
401	-	-	-
402	73	10-9	129
403	51	7-0	84
404	63	9-0	108
405	66	9-6	114
406	-	-	-
407	73	10-9	129
408	81	12-0	144
409	76	11-3	135
501	46	6-3	75
502	59	8-6	102
503	58	8-3	99
504	76	11-3	135
505	69	10-0	120

Detroit Tests of Learning Aptitude
-Subtest #13 - Auditory Attention
Span for Related Syllables

Student Number	# Correct	Mental Age (yrs. & mo.)	Mental Age in Months
506	41	5-6	66
507	63	9-0	108
508	68	10-0	120
509	46	6-3	75
510	-	-	-
601	75	11-0	132
602	91	13-9	165
603	-	-	-
604	59	8-6	102
605	60	8-6	102
606	82	12-3	147
607	75	11-0	132
608	75	10-0	120
609	78	11-6	138
610	65	9-6	114
701	-	-	-
702	81	12-0	144
703	78	11-6	138
704	73	10-9	129

Appendix F

Instructional Spelling Levels, Temple Informal Spelling Test

TEMPLE INFORMAL SPELLING TEST

Student Number	Instructional Spelling Level (Grade)
101	2
102	4
103	3
104	3
105	4
106	2
107	2
108	4
109	4
110	4
201	4
202	5
203	6
204	3
205	2
206	2
207	4
208	5
209	4
210	3
211	6
212	8+
301	2
302	2
303	4
304	1
305	6
306	3
307	5
308	7
401	3
402	6
403	4
404	8
405	6
406	4
407	4
408	4
409	3

Temple Informal Spelling Test

Student Number	Instructional Spelling Level (Grade)
501	4
502	2
503	3
504	2
505	7
506	3
507	5
508	4
509	1
510	3
601	4
602	1
603	2
604	2
605	3
606	2
607	4
608	3
609	2
610	2
701	5
702	- (refused further testing)
703	- (refused further testing)
704	4

Appendix G

Raw Scores and Quartile Ranking, Lincoln Intermediate Spelling Test

LINCOLN INTERMEDIATE SPELLING TEST

Student Number	# of Words Correct (100 Words)	Quartile Ranking
101	9	1
102	27	1
103	12	1
104	23	1
105	31	1
106	8	1
107	23	1
108	31	1
109	20	1
110	23	1
201	24	1
202	35	1
203	54	1
204	26	1
205	5	1
206	22	1
207	38	1
208	33	1
209	38	1
210	27	1
211	46	1
212	86	-
301	7	1
302	2	1
303	24	1
304	44	1
305	27	1
306	54	1
307	34	1
308	74	1
401	21	1
402	63	-
403	10	1
404	80	-
405	36	1
406	33	1
407	29	1
408	12	1
409	23	1
501	25	1
502	10	1
503	21	1
504	3	1

Lincoln Intermediate Spelling Test

Student Number	# of Words Correct (100 Words)	Quartile Ranking
505	69	2
506	8	1
507	31	1
508	26	1
509	9	1
601	45	1
602	1	1
603	4	1
604	9	1
605	18	1
606	17	1
607	36	1
608	15	1
609	8	1
610	18	1
701	Incomplete	
702	Refused	
703	Refused	
704	31	1

Appendix H

Raw Scores, Age Equivalents, Percentiles,

Myklebust Picture Story Language Test

MYKLEBUST PICTURE
STORY LANGUAGE TEST

Student Number	Total Words	Age Equiv. (months)	%	Total Sentences	Age Equiv. (months)	%
101	49	96	5	5	96	25
102	161	-	65	15	-	80
103	120	144	45	22	-	90
104	136	156	50	13	-	75
105	104	132	30	13	-	75
106	90	120	25	7	96	55
107	75	108	10	9	120	50
108	62	96	5	6	96	25
109	97	132	30	10	132	75
110	113	132	45	12	-	80
201	122	144	45	15	-	80
202	232	204	95	19	204	90
203	99	132	25	11	156	60
204	141	144	45	13	204	70
205	182	-	85	22	-	95
206	59	96	5	5	96	15
207	221	-	80	19	-	90
208	243	-	85	18	-	85
209	69	96	70	11	120	70
210	86	108	25	9	108	50
211	58	96	2	4	84	2
212	168	204	65	15	204	85
301	-	-	-	-	-	-
302	57	96	5	4	84	10
303	60	96	2	6	96	25
304	31	84	2	4	84	10
305	59	96	10	3	84	5
306	63	96	10	6	96	45
307	53	96	5	5	96	25
308	78	96	20	9	108	50
401	50	96	5	7	96	55
402	57	96	5	3	84	5
403	70	108	15	7	96	55
404	100	132	35	7	96	55
405	65	96	10	4	84	35
406	56	96	2	7	96	20
407	94	120	30	7	96	55
408	55	96	2	10	108	60
409	100	132	25	9	120	50
501	137	156	50	16	-	80
502	45	96	2	4	84	10
503	88	108	25	11	120	60
504	43	96	5	5	96	15
505	67	96	10	10	132	55
506	104	120	30	10	108	55

MYKLEBUST PICTURE
STORY LANGUAGE TEST

Student Number	Total Words	Age Equiv. (months)	%	Total Sentences	Age Equiv. (months)	%
507	54	96	5	5	84	15
508	42	96	2	5	96	15
509	-	-	-	-	-	-
510	32	84	2	3	84	5
601	104	108	30	10	132	55
602	51	96	5	7	96	35
603	46	96	5	5	96	25
604	74	108	10	8	108	40
605	38	84	2	5	84	15
606	46	96	5	4	84	15
607	-	-	-	-	-	-
608	67	96	10	7	96	55
609	84	108	20	9	108	70
610	81	108	15	4	84	10
701	54	96	5	6	84	45
702	35	84	2	3	84	5
703	-	-	-	-	-	-
704	59	96	10	6	96	45

Student Number	Words Per Sentence	Age Equiv. (months)	%	Syntax Quotient	Age Equiv. (months)	%
101	9.8	108	5	90	96	10
102	10.7	120	20	92	108	5
103	5.4	84	2	94	108	15
104	10.4	120	20	97	156	40
105	8	96	5	96	132	30
106	12.8	144	25	80	-	2
107	8.3	96	5	79	84	2
108	10.3	120	15	98	204	55
109	9.7	108	5	93	108	15
110	9.4	108	5	97	168	50
201	8.1	96	45	97	156	40
202	12.2	144	20	95	108	5
203	9	108	10	93	108	10
204	10.8	120	15	94	108	15
205	8.2	96	5	86	84	2
206	11.8	132	35	100	204	98
207	11.6	132	20	92	96	5
208	13.5	156	45	98	168	45
209	6.2	84	2	91	96	5
210	9.5	108	10	91	96	5
211	14.5	168	50	92	96	5
212	11.2	132	15	98.8	168	50
301	-	-	-	-	-	-
302	14.2	156	55	97.7	193	40
303	10	108	10	95	108	5
304	7.7	96	2	100	204	98
305	19.6	-	85	91	96	10
306	10.5	120	10	968	132	30
307	10.6	120	10	94	108	20
308	8.6	96	2	100	204	98
401	7.1	84	2	98	204	55
402	19	-	90	100	204	98
403	10	120	10	94	108	20
404	14.2	156	35	90	96	10
405	16.2	204	75	98	204	55
406	8	96	2	94	108	5
407	13.4	144	30	94	108	20
408	5.5	84	2	84	84	2
409	11.1	132	25	92	108	5
501	8.5	96	5	92	108	5
502	11.2	132	10	80	84	2
503	8	96	2	94	108	15
504	8.6	96	5	81	84	2
505	6.7	84	5	85	84	2

Student Number	Words Per Sentence	Age Equiv. (months)	%	Syntax Quotient	Age Equiv. (months)	%
506	10.4	120	15	97	120	35
507	10.8	120	15	93	96	10
508	8.4	96	5	87	96	2
509	-	-	-	-	-	-
510	10.6	120	10	90	96	10
601	10.4	120	15	95	120	20
602	7.2	96	2	93	108	10
603	9.20	108	5	95	120	20
604	9.2	108	10	94	108	15
605	7.6	96	2	92	96	5
606	11.5	132	15	88	96	5
607	-	-	-	-	-	-
608	9.5	108	5	93	108	15
609	9.3	108	5	96	132	30
610	20.2	-	90	93	108	10
701	9	108	5	89	96	5
702	11.6	132	10	92	108	10
703	-	-	-	-	-	-
704	9.8	108	10	89	96	5

Appendix I

Raw Scores, Grade Level Scores, Scaled Scores,

Gain Scores, Stanford Achievement Tests

STANFORD ACHIEVEMENT TEST RESULTS

Please Note: Students were pre and post-tested only in those areas in which they received instruction.
Students who were post-tested but not pre-tested entered the program after February 1, 1976.

	Reading Comprehension							Math Concepts							Math Computation						
	Pre			Post				Pre			Post				Pre			Post			
Student Number	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain
101	40	3.3	135	48	4.0	143	.7	18	5.4	158	26	7.5	180	2.1	19	5.0	157	21	5.1	158	.1
102	22	3.5	137	34	4.6	150	1.1														
103	41	3.4	136	42	3.6	138	.2	21	5.0	153	25	5.8	163	.8	19	3.8	143	30	5.3	161	1.5
104	52	4.3	146	61	5.9	163	1.6	21	6.0	166	21	5.8	163	-.2	32	6.7	173	36	7.8	182	1.1
105	44	7.1	174	46	7.4	176	.3	27	8.4	187											
106				56	4.9	154					26	6.0	167					32	5.6	164	
107				59	5.5	159												30	5.3	161	
108	29	4.5	149	49	6.6	169	2.1	24	7.5	178	21	6.8	174	-.7	26	6.4	170	30	6.9	177	.5
109	20	3.1	133	46	6.3	166	3.2														
110	33	5.1	155	55	7.6	178	2.5														
201	48	6.7	170	47	6.4	169	-.3	23	6.5	171	26	7.5	180	1.0	13	3.9	144	24	5.5	164	1.6
202	38	6.4	167	55	9.8	191	3.4	21	6.5	171	26	7.9	184	1.4	14	4.3	148	24	6.0	169	1.7
203	49	6.8	171	56	7.7	179	.9	15	4.7	152	20	5.6	163	.9	27	6.0	167	28	6.0	169	0
204	31	4.8	151	44	5.9	166	1.1	10	3.5	138	15	4.5	152	1.0	24	5.6	164	30	6.3	170	.7
205	21	3.3	134	20	2.5	133	-.8	17	5.2	157	22	6.0	169	.8	22	5.4	162	23	5.4	163	0
206	39	6.5	168	51	8.6	184	2.1	24	7.5	178	26	7.9	184	.4	33	7.8	182	37	8.8	189	1.0
207	28	4.4	148	35	4.8	157	.4	24	7.1	174	21	5.8	166	-1.3	29	6.2	170	37	8.3	185	2.1
208	42	6.0	164	52	7.0	174	1.0	15	4.7	152	18	5.2	158	.5	30	6.4	170	36	7.8	182	1.4
209	45	6.4	167	47	6.4	169	0	17	5.2	157	16	4.7	154	-.5	32	6.7	173	31	6.5	172	-.2
210	28	4.4	148	33	4.5	155	.1	20	5.8	163	28	8.4	187	2.6	36	7.8	182	39	9.5+	198	1.7
211	pretest not given			39	5.3	161					21	5.8	166					16	4.3	151	
212	56	9.8	191	57	10.5+	195	.7	22	6.8	174	29	9.1	194	2.3	29	6.7	175	35	8.3	185	1.6
301								22	6.2	169	30	9.5+	199	3.3	16	4.5	151	31	6.5	172	2.0
302	42	6.0	164	67	9.5+	202	3.5	24	7.5	178	30	9.6	197	2.1	24	6.0	169	37	8.8	189	2.8
303	45	6.4	167	54	7.4	176	1.0	22	6.8	174	24	7.6	179	.8	21	5.6	164	37	8.3	189	3.2
304				73	3.0	132					30	4.5	149					36	5.1	159	
305								18	5.8	163	25	7.7	181	1.9	23	5.9	166	27	6.5	172	.6
306	34	5.2	156	45	6.0	164	.8	27	8.4	187	29	9.1	194	.7	40	10.5+	201	40	10.5+	201	0
307	49	6.8	171	52	9.5+	173	2.7	28	8.7	190	29	9.1	194	.4	32	7.5	179	40	10.5+	201	3.0
308								27	8.4	187	30	9.6	197	1.2	36	8.5	187	39	9.9	202	1.4

STANFORD ACHIEVEMENT TEST RESULTS

Student Number	Reading Comprehension							Math Concepts							Math Computation						
	Pre			Post				Pre			Post				Pre			Post			
	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain
401	53	4.4	148	68	8.0+	182+	3.6	28	8.7	190	25	7.7	181	-1.0	20	5.5	163	26	6.4	171	.9
402	27	5.8	162	39	8.1	182	2.3	27	8.4	187	22	7.1	177	-1.3	27	6.5	172	32	7.5	179	1.0
403	41	6.7	171	50	8.1	182	1.4	17	5.6	161	22	7.1	177	1.5	17	5.0	157	23	5.9	166	.9
404	36	6.2	165	44	6.9	173	.7	21	6.5	171	25	7.7	181	1.2	39	9.9	198	42	10.5+	207	.6
405	50	8.1	182	55	9.8	191	1.7	23	7.1	177	26	7.9	184	.8	15	4.5	151	34	8.0	183	3.5
406	41	6.7	171	57	10.5+	195	3.8	25	7.7	181	16	5.6	161	-2.1	23	5.9	166	23	5.9	166	0
407	31	5.4	158	37	6.0	163	.6	16	5.4	157	18	5.9	167	.5	30	6.9	177	33	7.8	182	.9
408	34	5.8	162	46	7.4	176	1.6	27	8.4	187	25	7.7	181	-.7	40	10.5+	201	23	5.9	166	-4.6
409	23	3.6	138	41	5.5	159	1.9	14	4.5	150	24	6.5	171	2.0	21	5.2	160	12	3.7	142	-1.5
501	23	4.2	145	35	5.7	161	1.5	17	3.7	161	29	9.1	194	5.4	12	5.0	143	30	6.9	179	1.9
502	27	4.2	154	43	7.9	162	3.7	11	3.7	143	23	6.2	169	2.5	13	3.9	146	26	7.5	165	3.6
503	27	4.9	146	48	7.7	179	2.8	20	4.2	163	28	8.7	190	4.5	22	5.5	162	32	7.5	179	2.0
504	16	2.3	123	49	6.6	169	4.3	9	3.2	136	25	6.8	174	3.6	14	4.1	147	38	8.8	189	4.7
505	22	4.8	154	53	11.3	203	6.5	14	4.5	150	24	6.5	171	2.0	15	4.3	149	35	7.5	179	3.2
506	23	3.6	138	56	7.7	179	4.1	10	3.5	138	21	5.8	163	2.3	16	4.5	151	32	6.7	173	2.2
507	36	5.4	158	40	6.5	168	1.1	11	4.0	140	14	5.2	157	1.2	11	3.6	140	23	5.9	166	2.3
508	28	5.0	155	47	4.6	178	-.4	20	6.2	170	24	7.6	179	1.4	12	3.9	143	37	8.8	189	4.9
509	28	2.4	103	refused testing				18	2.4	123					18	2.3	128				
510	28	4.4	187	43	5.8	162	1.4	11	3.7	140	20	5.6	161	1.9	9	3.0	135	21	5.1	158	2.1
601	60	5.3	157	66	6.9	172	1.6	24	5.6	160	24	5.6	160	0	26	4.7	154	35	6.5	172	1.8
602	pretest not given			46	3.8	141					29	7.5	178								
603	47	3.8	141	59	5.5	159	1.7	20	4.7	151	27	6.2	170	1.5	32	5.6	164	33	5.9	166	.3
604	45	3.7	140	64	6.7	170	3.0														
605	43	3.6	138	57	5.1	155	1.5	17	3.9	143	20	4.7	151	.8	21	4.1	146	27	4.8	155	.7
606	64	6.2	165	63	6.4	167	.2	27	6.2	170	29	7.5	178	1.3	36	7.5	179	37	7.5+	179+	0
607	46	6.5	168	61	8.9	187	2.4	24	6.8	174	24	6.5	171	-.3	26	5.9	166	28	6.0	167	.1
608	62	9.3	189	65	9.5+	195	.2														
609	59	5.1	155	63	6.4	167	1.3	26	6.0	167	32	8.0+	182+	2.0	29	5.1	159	15	3.3	139	-1.8
610	46	3.8	141	50	4.2	145	.4														

STANFORD ACHIEVEMENT TEST RESULTS

Please Note: Students were pre and post-tested only in those areas in which they received instruction.
Students who were post-tested but not pre-tested entered the program after February 1, 1976.

	Reading Comprehension							Math Concepts							Math Computation						
	Pre			Post				Pre			Post				Pre			Post			
Student Number	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain
101	40	3.3	135	48	4.0	143	.7	18	5.4	158	26	7.5	180	2.1	19	5.0	157	21	5.1	158	.1
102	22	3.5	137	34	4.6	150	1.1														
103	41	3.4	136	42	3.6	138	.2	21	5.0	153	25	5.8	163	.8	19	3.8	143	30	5.3	161	1.5
104	52	4.3	146	61	5.9	163	1.6	21	6.0	166	21	5.8	163	-.2	32	6.7	173	36	7.8	182	1.1
105	44	7.1	174	46	7.4	176	.3	27	8.4	187											
106				56	4.9	154					26	6.0	167					32	5.6	164	
107				59	5.5	159												30	5.3	161	
108	29	4.5	149	49	6.6	169	2.1	24	7.5	178	21	6.8	174	-.7	26	6.4	170	30	6.9	177	.5
109	20	3.1	133	46	6.3	166	3.2														
110	33	5.1	155	55	7.6	178	2.5														
201	48	6.7	170	47	6.4	169	-.3	23	6.5	171	26	7.5	180	1.0	13	3.9	144	24	5.5	164	1.6
202	38	6.4	167	55	9.8	191	3.4	21	6.5	171	26	7.9	184	1.4	14	4.3	148	24	6.0	169	1.7
203	49	6.8	171	56	7.7	179	.9	15	4.7	152	20	5.6	163	.9	27	6.0	167	28	6.0	169	0
204	31	4.8	151	44	5.9	166	1.1	10	3.5	138	15	4.5	152	1.0	24	5.6	164	30	6.3	170	.7
205	21	3.3	134	20	2.5	133	-.8	17	5.2	157	22	6.0	169	.8	22	5.4	162	23	5.4	163	0
206	39	6.5	168	51	8.6	184	2.1	24	7.5	178	26	7.9	184	.4	33	7.8	182	37	8.8	189	1.0
207	28	4.4	148	35	4.8	157	.4	24	7.1	174	21	5.8	166	-1.3	29	6.2	170	37	8.3	185	2.1
208	42	6.0	164	52	7.0	174	1.0	15	4.7	152	18	5.2	158	.5	30	6.4	170	36	7.8	182	1.4
209	45	6.4	167	47	6.4	169	0	17	5.2	157	16	4.7	154	-.5	32	6.7	173	31	6.5	172	-.2
210	28	4.4	148	33	4.5	155	.1	20	5.8	163	28	8.4	187	2.6	36	7.8	182	39	9.5+	198	1.7
211	pretest not given			39	5.3	161					21	5.8	166					16	4.3	151	
212	56	9.8	191	57	10.5+	195	.7	22	6.8	174	29	9.1	194	2.3	29	6.7	175	35	8.3	185	1.6
301								22	6.2	169	30	9.5+	199	3.3	16	4.5	151	31	6.5	172	2.0
302	42	6.0	164	67	9.5+	202	3.5	24	7.5	178	30	9.6	197	2.1	24	6.0	169	37	8.8	189	2.8
303	45	6.4	167	54	7.4	176	1.0	22	6.8	174	24	7.6	179	.8	21	5.6	164	37	8.8	189	3.2
304				73	3.0	132					30	4.5	149					36	5.1	159	
305								18	5.8	163	25	7.7	181	1.9	23	5.9	166	27	6.5	172	.6
306	34	5.2	156	45	6.0	164	.8	27	8.4	187	29	9.1	194	.7	40	10.5+	201	40	10.5+	201	0
307	49	6.8	171	52	9.5+	173	2.7	28	8.7	190	29	9.1	194	.4	32	7.5	179	40	10.5+	201	3.0
308								27	8.4	187	30	9.6	197	1.2	36	8.5	187	39	9.9	202	1.4

STANFORD ACHIEVEMENT TEST RESULTS

	Reading Comprehension							Math Concepts							Math Computation						
	Pre			Post				Pre			Post				Pre			Post			
Student Number	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain	Raw	Grade	Scale	Raw	Grade	Scale	Gain
401	53	4.4	148	68	8.0+	182+	3.6	28	8.7	190	25	7.7	181	-1.0	20	5.5	163	26	6.4	171	.9
402	27	5.8	162	39	8.1	182	2.3	27	8.4	187	22	7.1	177	-1.3	27	6.5	172	32	7.5	179	1.0
403	41	6.7	171	50	8.1	182	1.4	17	5.6	161	22	7.1	177	1.5	17	5.0	157	23	5.9	166	.9
404	36	6.2	165	44	6.9	173	.7	21	6.5	171	25	7.7	181	1.2	39	9.9	198	42	10.5+	207	.6
405	50	8.1	182	55	9.8	191	1.7	23	7.1	177	26	7.9	184	.8	15	4.5	151	34	8.0	183	3.5
406	41	6.7	171	57	10.5+	195	3.8	25	7.7	181	16	5.6	161	-2.1	23	5.9	166	23	5.9	166	0
407	31	5.4	158	37	6.0	163	.6	16	5.4	157	18	5.9	167	.5	30	6.9	177	33	7.8	182	.9
408	34	5.8	162	46	7.4	176	1.6	27	8.4	187	25	7.7	181	-.7	40	10.5+	201	23	5.9	166	-4.6
409	23	3.6	138	41	5.5	159	1.9	14	4.5	150	24	6.5	171	2.0	21	5.2	160	12	3.7	142	-1.5
501	23	4.2	145	35	5.7	161	1.5	17	3.7	161	29	9.1	194	5.4	12	5.0	143	30	6.9	179	1.9
502	27	4.2	154	43	7.9	162	3.7	11	3.7	143	23	6.2	169	2.5	13	3.9	146	26	7.5	165	3.6
503	27	4.9	146	48	7.7	179	2.8	20	4.2	163	28	8.7	190	4.5	22	5.5	162	32	7.5	179	2.0
504	16	2.3	123	49	6.6	169	4.3	9	3.2	136	25	6.8	174	3.6	14	4.1	147	38	8.8	189	4.7
505	22	4.8	154	53	11.3	203	6.5	14	4.5	150	24	6.5	171	2.0	15	4.3	149	35	7.5	179	3.2
506	23	3.6	138	56	7.7	179	4.1	10	3.5	138	21	5.8	163	2.3	16	4.5	151	32	6.7	173	2.2
507	36	5.4	158	40	6.5	168	1.1	11	4.0	140	14	5.2	157	1.2	11	3.6	140	23	5.9	166	2.3
508	28	5.0	155	47	4.6	178	-.4	20	6.2	170	24	7.6	179	1.4	12	3.9	143	37	8.8	189	4.9
509	28	2.4	103	refused testing				18	2.4	123					18	2.3	128				
510	28	4.4	187	43	5.8	162	1.4	11	3.7	140	20	5.6	161	1.9	9	3.0	135	21	5.1	158	2.1
601	60	5.3	157	66	6.9	172	1.6	24	5.6	160	24	5.6	160	0	26	4.7	154	35	6.5	172	1.8
602	pretest not given			46	3.8	141					29	7.5	178								
603	47	3.8	141	59	5.5	159	1.7	20	4.7	151	27	6.2	170	1.5	32	5.6	164	33	5.9	166	.3
604	45	3.7	140	64	6.7	170	3.0														
605	43	3.6	138	57	5.1	155	1.5	17	3.9	143	20	4.7	151	.8	21	4.1	146	27	4.8	155	.7
606	64	6.2	165	63	6.4	167	.2	27	6.2	170	29	7.5	178	1.3	36	7.5	179	37	7.5+	179+	0
607	46	6.5	168	61	8.9	187	2.4	24	6.8	174	24	6.5	171	-.3	26	5.9	166	28	6.0	167	.1
608	62	9.3	189	65	9.5+	195	.2														
609	59	5.1	155	63	6.4	167	1.3	26	6.0	167	32	8.0+	182+	2.0	29	5.1	159	15	3.3	139	-1.8
610	46	3.8	141	50	4.2	145	.4														

Appendix J

Raw Scores, Percentiles,

AAHPER Youth Fitness Test

AAHPER YOUTH FITNESS TEST

SIT-UPS
*female

Student Number	Age	Sit-Ups	%	Shuttle Run (seconds)	%
101	14	90	100	21.6	0
102	13	100	100	22.7	0
103	12	95	100	21.1	0
104	13	95	100	21.4	0
105	13	25	15	25.9	0
106	14	20	5	22.9	0
107	12	54	95	20.0	0
108	12	45	85	23.0	0
109	14	100	100	19.9	0
110	14	100	100	21.9	0
201	13	40	55	11.8	10
202*	14	50	95	10.4	75
203	13	0	0	12.7	5
204*	13	40	85	10.5	75
205	15	50	85	11.2	10
206	13	35	40	11.0	25
207*	13	25	30	10.5	75
208*	13	42	90	11.4	45
209*	15	20	10	11.8	25
210*	13	23	25	11.9	30
211*	15	-	-	-	-
212*	15	29	40	12.2	15
301	14	100	100	-	-
302	13	100	100	10.1	65
303*	15	30	45	11.4	35
304	13	-	-	-	-
305	14	100	100	9.8	70
306	16	-	-	-	-
307	14	-	-	-	-
308*	13	53	100	13.5	5
401	15	49	80	10.0	45
402	13	38	50	11.5	15
403	14	45	70	11.0	15
404	14	36	35	11.2	10
405	13	38	50	11.0	30
406*	14	20	15	11.9	25
407	15	23	0	12.4	5
408*	14	20	15	12.4	15
409	13	38	50	11.8	10
501	12	30	30	10.2	75
502	13	38	50	9.8	80
503*	12	20	15	12.0	25
504	12	38	60	9.9	90

AAHPER Youth Fitness Test

Sit-Ups

Student Number	Age	Sit-Ups	%	Shuttle Run (seconds)	%
505*	12	20	15	10.8	75
506	12	30	30	11.0	40
507*	12	20	15	12.0	25
508	13	38	50	11.9	10
509		—	—	—	—
510	13	45	75	10.2	60
601	13	50	90	11.2	20
602	13	33	35	9.0	95
603	14	59	95	9.8	70
604	13	46	80	11.3	20
605*	14	43	60	10.0	90
606	14	57	95	10.2	40
607	15	59	95	9.5	70
608	14	53	90	10.2	40
609	14	—	—	10.0	55
610	13	51	90	10.4	50
701	14	55	95	11.0	15
702	16	33	20	10.0	45
703	17	60	100	9.0	85
704	14	150	100.	8.0	95

AAHPER YOUTH FITNESS TEST

Pull-ups (boys)
Flexed Arm Hang (girls)

*-female

Student Number	Age	No. of Pull Ups	%	Flexed Arm Hang (seconds)	%
101	14	3	35	-	-
102	13	7	85	-	-
103	12	0	30	-	-
104	13	2	35	-	-
105	13	2	35	-	-
106	14	6	65	-	-
107	12	7	90	-	-
108	12	5	80	-	-
109	14	12	95	-	-
110	14	1	20	-	-
201	13	1	30	-	-
202*	14	-	-	8	45
203	13	-	-	-	-
204*	13	-	-	15	75
205	15	4	35	-	-
206	13	6	80	-	-
207*	13	-	-	16	75
208*	13	-	-	9	55
209*	15	-	-	3	20
210*	13	-	-	15	75
211*	15	-	-	-	-
212*	15	-	-	6	40
301	14	15	95	-	-
302	13	1	30	-	-
303*	15	-	-	-	-
304	13	-	-	-	-
305	14	14	95	-	-
306	16	-	-	-	-
307	14	-	-	-	-
308*	13	-	-	-	-
401	15	1	15	-	-
402	13	0	20	-	-
403	14	3	40	-	-
404	14	2	30	-	-
405	13	2	45	-	-
406*	14	-	-	0	5
407	15	0	5	-	-
408*	14	-	-	26	85
409	13	2	45	-	-
501	12	3	65	-	-
502	13	7	85	-	-
503*	12	-	-	5.3 sec.	35
504	12	2	55	-	-

AAHPER Youth Fitness Test

Student Number	Age	No. of Pull Ups	%	Flexed Arm Hang (seconds)	%
505*	12	-	-	7.7 sec.	45
506	12	3	65	-	-
507*	12	-	-	5.2 sec.	35
508	13	0	20	-	-
509					
510	13	6	80	-	-
601	13	0	20	-	-
602	13	3	50	-	-
603	14	10	90	-	-
604	13	2	45	-	-
605*	14				
606	14	11	95	-	-
607	15	10	80	-	-
608	14	8	80	-	-
609	14	3	40	-	-
610	13	4	65	-	-
701	14	0	10	-	-
702	16	2	10	-	-
703	17	13	90	-	-
704	14	3	40	-	-

*Female

Student Number	Age	Standing Long Jump	%	50 Yard Dash (seconds)	%
101	14	76	60	7.9	20
102	13	62	25	-	
103	12	80	95	8.0	40
104	13	66	40	7.8	30
105	13	60	20	7.9	30
106	14	71	40	6.8	75
107	14	84	95	6.3	100
108	12	58	20	8.0	40
109	14	85	90	6.5	85
110	14	70	35	8.2	10
201	13	69	50	7.6	40
202*	14	66	55	8.0	40
203	13	46	5	10.5	5
204*	13	69	75	7.6	65
205	15	62	5	7.5	15
206	13	67	45	7.4	60
207*	13	70	75	7.5	70
208*	13	69	75	7.3	80
209*	15	48	5	8.8	10
210*	13	61	40	7.0	90
211*	15	-	-	7.7	55
212*	15	41	5	8.9	10
301	14	85	90	6.7	80
302	13	67	45	7.3	60
303	15	46	5	8.7	15
304	13				
305	14	82	80	6.9	70
306	16				
307	14				
308*	13	62	45		
401	15	73	25	absent	
402	13	57	15	8.6	10
403	14	74	50	8.2	10
404	14	80	75	8.0	15
405	13	77	80	8.8	10
406*	14	59	30	8.3	25
407	15	69	15	8.4	5
408*	14	73	80	9.8	5
409	13	68	50	10.0	5
501	12	71	75	8.5	20
502	13	85	95	8.0	25
503*	12	60	50	10.2	5
504	12	66	55	8.0	40

*Female

Student Number	Age	Standing Long Jump	%	50 Yard Dash (seconds)	%
505*	12	77	95	8.0	60
506	12	60	25	9.0	10
507*	12	56	30	10.2	5
508	13	65	35	10.0	5
509	-	-	-	-	-
510	13	75	75	7.5	50
601	13	64	35	7.6	40
602	13	62	25	7.5	50
603	14	72	45	6.9	70
604	13	65	35	8.7	10
605*	14	74	85	7.3	75
606	14	84	90	7.0	65
607	15	76	35	6.8	60
608	14	80	75	7.3	45
609	14	72	45	7.4	40
610	13	77	80	7.5	50
701	14	82	80	7.0	65
702	16	77	25	7.8	5
703	17	99	95	9.3	0
704	14	72	45	8.5	10

*Female

Student Number	Age	600 Yard Run-Walk (seconds)	%
101	14	132	30
102	13	-	-
103	12	166	15
104	13	131	50
105	13	135	40
106	14	-	-
107	12	151	30
108	12	600	0
109	14	116	70
110	14	120	55
201	13	143	30
202*	14	127	90
203	13	189	5
204*	13	162	50
205	15	126	30
206	13	171	10
207*	13	126	95
208*	13	147	70
209*	15	183	20
210*	13	138	85
211*	15	129	90
212*	15	194	15
301	14	-	-
302	13	135	40
303*	15	220	5
304	13	-	-
305	14	107	85
306	16	-	-
307	14	-	-
308*	13	179	5
401	15	-	-
402	13	155	15
403	14	226	5
404	14	157	10
405	13	154	20
406*	14	184	15
407	15	163	5
408*	14	159	30
409	13	175	10
501	12	201	5
502	13	243	0
503*	12	315	0
504	12	243	5
505*	12	251	0
506	12	183	10
507*	12	315	0

*Female

Student Number	Age	600 Yard Run-Walk (seconds)	%
508	13	187	5
509	-	-	-
510	13	170	10
601	13	140	35
602	13	97	95
603	14	94	95
604	13	140	35
605*	14	123	95
606	14	107	85
607	15	109	70
608	14	112	75
609	14	128	55
610	13	147	25
701	14	125	55
702	16	115	45
703	17	118	35
704	14	113	75